In Conversation:
Research Fellow
Karen Meaburn, Ph.D.

(*Photo: V. Roukos*)

Karen Meaburn, Ph.D.

CCR: Karen, congratulations on your recent publication in the *Journal of Cell Biology*.

Karen: Thank you. We are very excited to discover that the physical positions of certain genes within the nucleus are altered in breast cancer cells—the finding opens up so many questions, both about the basic biology and translational potential.

CCR: What led you to the discovery?

Karen: We've known from the literature that genes and even whole chromosomes are in different positions depending on the situation, for example, depending on gene expression levels in cells or differentiation status. Given the dramatic changes in gene expression that occur in cancer, we thought that if we studied several cancer genes, we may find some that have also moved position.

CCR: And how are you planning to follow up on this work?

Karen: Our data is only from a small set of patients at this point, but we're hopeful that it might form the basis of a diagnostic test. We are currently expanding our study to hundreds of tissue samples, and we'll also be looking at cancers from other tissues than breast.

We also want to know if gene positioning is the same in primary tumors as compared to metastatic cancer. The answer could give us a very interesting window into the nature of metastasis and the way cancer evolves.

CCR: Judging from your publication record, your time in the Misteli lab has been very successful. Tell us a bit about your personal experience here.

Karen: I met Tom Misteli at a conference that was held at Brunel University in London, where I was studying genome organization as a doctoral student with Joanna Bridger. Moving to Tom's laboratory for my postdoctoral work seemed like a natural fit. Tom's lab isn't micromanaged—he trusts you to be independent and get on with things. At the same time, it's a very supportive environment and has a lot of resources available.

In June, I will have been in the laboratory for five years and will be staying on for another two years as a research fellow.

CCR: And has there been any downside to your time here?

Karen: I can't think of any. The campus is a great environment for cancer research, and there are also lots of opportunities to collaborate within the Institute. For example, Tom's lab has a long-term collaboration with Stephen Lockett's group in Frederick to develop the imaging software that we need to analyze changes in genome organization.

In fact, about the hardest thing has been being so far away from my home in the U.K.

CCR: Is your family supportive of your work?

Karen: Oh yes. None of them are scientists—in fact, I have a twin brother that is an accountant. They've always appreciated that I found something I love, but they didn't always understand the importance when I was doing very basic biology. Now that we are talking about diagnostic applications, I think they see the value more clearly. In fact, just before I came to the NIH, my mother was diagnosed with breast cancer so the connection is much more immediate for our family.

CCR: Do you think your interest in basic biology has shifted to more applied science?

Karen: Not really, although my interest in translation has grown, I see the basic and translational aspects as two sides of the same coin. We need to understand the biology to treat the disease, and we can learn a lot about the biology by studying the disease and its response to treatment.